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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Pete D. Vogt

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EXAMINER

TABONE JR, JOHN J

ART UNIT

PAPER NUMBER

2138

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/714,026	VOGT, PETE D.	
	Examiner	Art Unit	
	John J. Tabone, Jr.	2138	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-9 and 11-34 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-27 is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-18 and 28-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>08302006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-9 and 11-34 are pending in the current application and has been examined.
2. Due to Applicant's Amendment filed 08/30/2006 the Examiner has:
 - a. Withdrawn objections to the Drawings, Specification and claims.
 - b. Withdrawn 35 USC § 112, second paragraph rejections.

Response to Arguments

3. Applicant's arguments filed 08/30/2006 with respect to independent claim 12 have been fully considered but they are not persuasive. Applicant's arguments with respect to independent claims 1 and 28 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments, with respect to independent claim 19 have been fully considered and are persuasive. The rejection of claims 19-27 has been withdrawn. Further claims 19-27 have been allowed.

As per the arguments for independent claim 1, "claim 1 recites a memory agent...Bunton is directed to an I/O interconnect system" the Examiner would like to point out that with the amendment to claim 1 filed 08/30/2006 the Applicant removed the reference to "the memory agent" in the body of the claim. Therefore, the recitation "a memory agent" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where

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the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). The Examiner, therefore, asserts the any prior art disclosing a structure with receive link and lanes, transmit link and lanes and a loopback unit will read on this claim. Hence the new grounds of rejection. However, the Examiner asserts that Bunton does teach a memory agent in that Bunton's invention is for the solution of I/O problems between processors, memory controllers and memory in a memory-processor architecture. Also, in reference to Fig. 3 Bunton teaches [a]lternatively, the HCA 220 may be connected directly to a memory controller (memory agent). (Col. 2, ll. 17-35, col. 6, l.66 to col. 7, l. 10).

In response to applicant's argument, for independent claim 12, that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "*a mapping (e.g., mapping A, mapping B) is a predetermined arrangement that specifies which receive lanes should be redirected to which transmit lanes*") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Further, the Applicant argues, "Bunton does not disclose any mappings". The Examiner would like to direct the Applicant to Bunton's Figure 9 where mapping is clearly disclosed.

It is the Examiner's conclusion that independent claim 12 are not patentably distinct or non-obvious over the prior arts of record namely, Bunton et al. (US006961347). Therefore, the rejection is maintained. Based on their dependency on independent claim 12, claims 11-18 stand rejected.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 12-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Bunton et al. (US006961347), hereinafter Bunton.

Claim 12:

Bunton teaches a first link interface having a plurality of first lanes; and a second link interface having a plurality of second lanes. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26). Bunton also teaches the memory agent (computer 100/server 300, network switch 130, Fig. 2, 3) may transmit training sequences having different mapping indicators on one or more of the plurality of first lanes, receive return sequences on one or more of the plurality of second lanes responsive to the training sequences and analyzing the return sequences to identify failed lanes in the plurality of

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first lanes and plurality of second lanes. (Abstract, Col. 4, ll. 18-54, col. 7, l. 18 to col. 9, l. 8, Fig. 4-6, col. 10, l. 29 to col. 12, l. 8, Fig. 9-12).

Claim 13:

Bunton teaches the first link interface comprises a receive link interface and the second link interface comprises a transmit link interface. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26).

Claim 14:

Bunton teaches the first lanes comprise receive bit lanes and the second lanes comprise transmit bit lanes. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26).

Claim 15:

Bunton teaches the memory agent may receive the training sequences as the return sequences. (Abstract, Col. 4, ll. 18-54, col. 7, l. 18 to col. 9, l. 8, Fig. 4-6, col. 10, l. 29 to col. 12, l. 8, Fig. 9-12).

Claim 16:

Bunton teaches the memory agent may transmit test parameters in the training sequences. (Abstract, Col. 4, ll. 18-54, col. 7, l. 18 to col. 9, l. 8, Fig. 4-6, col. 10, l. 29 to col. 12, l. 8, Fig. 9-12).

Claim 17:

Bunton teaches the memory agent may transmit electrical stress patterns in the training sequences. (Abstract, Col. 4, ll. 18-54, col. 7, l. 18 to col. 9, l. 8, Fig. 4-6, col. 10, l. 29 to col. 12, l. 8, Fig. 9-12).

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Claim 18:

Bunton teaches the memory agent comprises a memory controller. (NORTH BRIDGE 206, alternately a memory controller, col. 7, ll. 9-10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9, 11, 28-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunton et al. (US006961347), hereinafter Bunton, in view of Li et al. (US-5515361), hereinafter Li.

Claim 1:

Bunton teaches a receive link interface having a plurality of receive lanes to receive training sequences and a transmit link interface having a plurality of transmit lanes to transmit training sequences. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26). (Abstract, Col. 4, ll. 18-54, Col. 10, l. 29 to col. 12, l. 8, Fig. 9-12). Bunton also teaches a memory agent in that Bunton's invention is for the solution of I/O problems between processors, memory controllers and memory in a memory-processor architecture. Also, in reference to Fig. 3 Bunton teaches [a]lternatively, the HCA 220 may be connected directly to a memory controller (memory agent). (Col. 2, ll. 17-35, col. 6, l. 66 to col. 7, l. 10).

Bunton does not explicitly teach “a loopback unit coupled to the receive and transmit link interfaces to selectively redirect one or more of the receive lanes to one or more of the transmit lanes to retransmit the received training sequences as the return sequences during a lane testing operation”. Li teaches in an analogous art “a loopback unit (**loopback switch 301**) coupled to the receive (**receiver 202**) and transmit (**transmitter 201**) link interfaces to selectively redirect (**loop 306**) one or more of the receive lanes (**up link 206**) to one or more of the transmit lanes (**down link 207**) to retransmit the received training sequences as the return sequences during a lane testing operation”. (Fig. 2, 3A, 3B, col. 3, ll. 11-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bunton’s multi-lane link system to incorporate Li’s loopback switch 301. The artisan would be motivated to do so because it would enable Bunton to loopback the transmit links to the receive links upon detecting a training sequence failure and further enable Bunton to facilitate failure isolation in a bus architecture (see Bunton, col. 8, ll. 4-12 for problem to be solved and Li, col. 3, ll. 41-60 for solution to Bunton’s problem).

Claim 2:

Bunton teaches the receive link interface is a first receive link interface and the transmit link interface is a first transmit link interface. Bunton also teaches a second transmit link interface having a plurality of second transmit lanes and a second receive link interface having a plurality of second receive lanes. (multi-lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26, Fig. 9).

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Claim 3:

Bunton in view of Li teaches a passthrough mode during a lane testing operation by retransmitting training sequences received on the first receive link interface to the second transmit link interface, and retransmitting return sequences received on the second receive link interface to the first transmit link interface. (Fig. 2, 3A, col. 3, ll. 35-40, in the normal mode of operation of the loopback switch 301, optical switch 208 is set in the 'bar' position 302).

Claim 4:

Bunton teaches the memory agent may selectively map one of the receive lanes to one or more of the transmit lanes during a lane testing operation. (Abstract, Col. 4, ll. 18-54, col. 7, l. 18 to col. 9, l. 8, Fig. 4-6, col. 10, l. 29 to col. 12, l. 8, Fig. 9-12).

Claim 5:

Bunton teaches the memory agent may selectively map one or more of the receive lanes to one or more of the transmit lanes according to a plurality of mappings. (Abstract, Col. 4, ll. 18-54, col. 7, l. 18 to col. 9, l. 8, Fig. 4-6, col. 10, l. 29 to col. 12, l. 8, Fig. 9-12).

Claim 6:

Bunton teaches memory agent may select one of the mappings responsive to a mapping indicator in a training sequence received on the receive link interface. (Abstract, Col. 4, ll. 18-54, col. 7, l. 18 to col. 9, l. 8, Fig. 4-6, col. 10, l. 29 to col. 12, l. 8, Fig. 9-12).

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Claim 7:

Bunton teaches the memory agent may retransmit the received training sequence with modification as the return sequence. (Abstract, Col. 4, ll. 18-54, col. 7, l. 18 to col. 9, l. 8, Fig. 4-6, col. 10, l. 29 to col. 12, l. 8, Fig. 9-12).

Claim 8:

Bunton teaches the memory agent comprises a memory buffer (FIFO buffers, Fig. 8).

Claim 9:

Bunton teaches the memory agent comprises a memory module (memory 204, Fig. 3).

Claim 11:

Bunton in view of Li teaches the loopback unit (**loopback switch 301**), which comprises a multiplexer (**switch 208**).

Claim 32:

Bunton in view of Li teaches the modification includes identifying or status information. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26).

Claim 33:

Bunton in view of Li teaches one of the return sequences comprises one of the received training sequences. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26).

Claim 34:

Bunton in view of Li teaches one of the return sequences consists essentially of one of the received training sequences. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26).

Claim 28:

Bunton teaches a receive link interface having a plurality of receive lanes to receive training sequences and a transmit link interface having a plurality of transmit lanes to transmit training sequences. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26). Bunton also teaches a memory agent in that Bunton's invention is for the solution of I/O problems between processors, memory controllers and memory in a memory-processor architecture. Also, in reference to Fig. 3 Bunton teaches [a]lternatively, the HCA 220 may be connected directly to a memory controller (memory agent). (Col. 2, ll. 17-35, col. 6, l. 66 to col. 7, l. 10). Bunton further teaches a memory controller (NORTH BRIDGE 206, alternately a memory controller, col. 7, ll. 9-10) coupled to the memory agent. (Abstract, Col. 4, ll. 18-54, Col. 10, l. 29 to col. 12, l. 8, Fig. 9-12).

Bunton does not explicitly teach "a loopback unit coupled to the receive and transmit link interfaces to selectively redirect one or more of the receive lanes to one or more of the transmit lanes to retransmit the received training sequences as the return sequences during a lane testing operation". Li teaches in an analogous art "a loopback unit (**loopback switch 301**) coupled to the receive (**receiver 202**) and transmit (**transmitter 201**) link interfaces to selectively redirect (**loop 306**) one or more of the

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receive lanes (**up link 206**) to one or more of the transmit lanes (**down link 207**) to retransmit the received training sequences as the return sequences during a lane testing operation". (Fig. 2, 3A, 3B, col. 3, ll. 11-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bunton's multi-lane link system to incorporate Li's loopback switch 301. The artisan would be motivated to do so because it would enable Bunton to loopback the transmit links to the receive links upon detecting a training sequence failure and further enable Bunton to facilitate failure isolation in a bus architecture (see Bunton, col. 8, ll. 4-12 for problem to be solved and Li, col. 3, ll. 41-60 for solution to Bunton's problem).

Claim 29:

Bunton teaches the first link interface comprises a receive link interface and the second link interface comprises a transmit link interface. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26).

Claim 30:

Bunton teaches the first lanes comprise receive bit lanes and the second lanes comprise transmit bit lanes. (two lane links 140, Fig. 2, col. 6, ll. 59-65, col. 10, ll. 24-26).

Claim 31:

Bunton teaches a second memory agent coupled to the memory agent. (Fig. 7, col. 9, ll. 9-52).

Allowable Subject Matter

Claims 19-27 are allowed.

The Examiner agrees with the Applicant's arguments filed 08/30/2006 with regard to the feature recited in independent claim 19 in view of the arts of record; therefore, the Examiner favors the allowance of claims 19-27. Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably accompany the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Tabone, Jr. whose telephone number is (571) 272-3827. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


John J. Tabone, Jr.
Examiner
Art Unit 2138
11/9/06



GUY LAMARRE
PRIMARY EXAMINER